McBasic 10/100

Operation Manual

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class A computing device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The use of non-shielded I/O cables may not guarantee compliance with FCC RFI limits. This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

Warranty

IMC Networks warrants to the original end-user purchaser that this product, EXCLUSIVE OF SOFTWARE, shall be free from defects in materials and workmanship under normal and proper use in accordance with IMC Networks' instructions and directions for a period of six (6) years after the original date of purchase. This warranty is subject to the limitations set forth below.

At its option, IMC Networks will repair or replace at no charge the product which proves to be defective within such warranty period. This limited warranty shall not apply if the IMC Networks product has been damaged by unreasonable use, accident, negligence, service or modification by anyone other than an authorized IMC Networks Service Technician or by any other causes unrelated to defective materials or workmanship. Any replaced or repaired products or parts carry a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

To receive in-warranty service, the defective product must be received at IMC Networks no later than the end of the warranty period. The product must be accompanied by proof of purchase, satisfactory to IMC Networks, denoting product serial number and purchase date, a written description of the defect and a Return Merchandise Authorization (RMA) number issued by IMC Networks. No products will be accepted by IMC Networks which do not have an RMA number. For an RMA number, contact IMC Networks at PHONE: (800) 624-1070 (in the U.S and Canada) or (949) 465-3000 or FAX: (949) 465-3020. The end-user shall return the defective product to IMC Networks, freight, customs and handling charges prepaid. End-user agrees to accept all liability for loss of or damages to the returned product during shipment. IMC Networks shall repair or replace the returned product, at its option, and return the repaired or new product to the end-user, freight prepaid, via method to be determined by IMC Networks. IMC Networks shall not be liable for any costs of procurement of substitute goods, loss of profits, or any incidental, consequential, and/or special damages of any kind resulting from a breach of any applicable express or implied warranty, breach of any obligation arising from breach of warranty, or otherwise with respect to the manufacture and sale of any IMC Networks product, whether or not IMC Networks has been advised of the possibility of such loss or damage.

EXCEPT FOR THE EXPRESS WARRANTY SET FORTH ABOVE, IMC NETWORKS MAKES NO OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, WITH RESPECT TO THIS IMC NETWORKS PRODUCT, INCLUDING WITHOUT LIMITATION ANY SOFTWARE ASSOCIATED OR INCLUDED. IMC NETWORKS SHALL DISREGARD AND NOT BE BOUND BY ANY REPRESENTATIONS OR WARRANTIES MADE BY ANY OTHER PERSON, INCLUDING EMPLOYEES, DISTRIBUTORS, RESELLERS OR DEALERS OF IMC NETWORKS, WHICH ARE

INCONSISTENT WITH THE WARRANTY SET FORTH ABOVE. ALL IMPLIED WARRANTIES INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY LIMITED TO THE DURATION OF THE EXPRESS WARRANTY STATED ABOVE.

Every reasonable effort has been made to ensure that IMC Networks product manuals and promotional materials accurately describe IMC Networks product specifications and capabilities at the time of publication. However, because of ongoing improvements and updating of IMC Networks products, IMC Networks cannot guarantee the accuracy of printed materials after the date of publication and disclaims liability for changes, errors or omissions.

Table of Contents

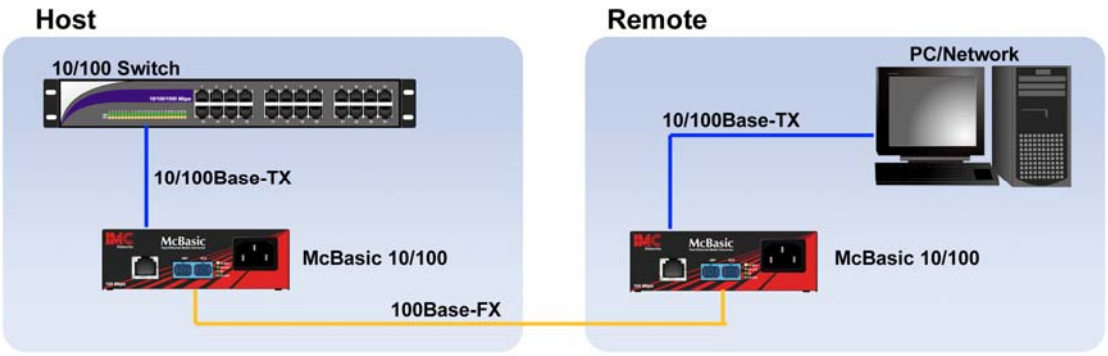
FCC Radio Frequency Interference Statement ii
Warranty ii
About the McBasic 10/100 Module 1
Installing the McBasic 10/100 1
Configuring the McBasic 10/100 2
Twisted Pair Crossover/Pass-Through Switch 2
Modes of Operation 3
Auto Negotiation and the McBasic 10/100 3
Troubleshooting Features 4
LED Operation 5
Installation Troubleshooting 5
Electrostatic Discharge Precautions 6
Fiber Optic Cleaning Guidelines 7
IMC Networks Technical Support 7
Specifications 7
Safety Certifications 8

About the McBasic 10/100 Module

The McBasic 10/100 module is a low-cost, standalone, IEEE 802.3 single-conversion media converter which converts between:

- 10Base-T twisted pair and 10Base-FL multi-mode or single-mode fiber
- 100Base-TX twisted pair and 100Base-SX multi-mode fiber or 100Base-FX single-mode fiber

The McBasic 10/100 is a 1U high, standalone unit that includes diagnostic LEDs for each port and an internal, universal (100/240 VAC) power supply.



Installing the McBasic 10/100

The McBasic 10/100 comes ready to install. The only adjustments that may need to be made after installation are:

- Configuring the mode of operation and other features on the unit.
- Setting the twisted pair port for a crossover workstation or pass-through connection.

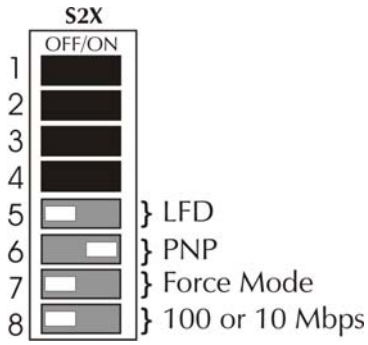
To install McBasic 10/100:

1. First make sure the unit is placed on a suitable flat surface, leaving some space at the back of the unit.
2. Attach the cables between the McBasic 10/100 and each device that will be interconnected.
3. Plug the unit into a reliable, filtered power source.

NOTE
All network cables must be connected before the link LEDs will glow.

Configuring the McBasic 10/100

The McBasic 10/100 features an 8-position DIP Switch for configuring the unit. This switch is accessed through a cut-out in the bottom of the unit. After configuring the switch, power down the unit and then power up again for the DIP Switch changes to take effect.



The following table provides simplified definitions of the function of each switch. Refer to the following sections for more detail.

Feature	Switch	Function	Default
LFD	S5	Link fault detection available in force mode only (S7 is ON)	OFF
AN	S6	Auto Negotiation mode (plug-n-play) available when force mode is disabled (S7 is OFF)	ON
Force	S7	Force mode forces the module to operate at 10 or 100 Mbps as determined by S8	OFF
10/100	S8	When ON, operates at 10 Mbps. When OFF, operates at 100 Mbps. Available when force mode is enabled (S7 is ON)	OFF
DIP Switches S1-S4 are factory configured—DO NOT CHANGE			

Twisted Pair Crossover/Pass-Through Switch

The McBasic 10/100 has a Crossover/Pass-Through push-button switch, located on the faceplate next to the RJ-45 connector, for setting the twisted pair connection type.

Select a Pass-Through connection by pressing the push-button IN. A Crossover connection is selected when the push-button is OUT. If not sure which connection is needed, set the push-button to whatever setting makes the twisted pair LNK (link) LED glow.

Modes of Operation

The McBasic 10/100 has three modes of operation:

- Auto Negotiation/PNP
- Force10
- Force100

The McBasic 10/100 should be configured for one of these modes (factory default is AN/PNP mode). Refer to the following sections for more information.

NOTE
The McBasic 10/100 cannot be set for Half- or Full-Duplex manually. Duplex is determined by the devices connected to the McBasic 10/100.

Auto Negotiation mode, also known as PNP, is the mode most ideally suited for the McBasic 10/100. In this mode, the converter will optimally and automatically configure for speed (10 or 100 Mbps) depending on the capabilities of the end stations. To enable Auto Negotiation/PNP mode, set switch S6 to the ON position, with switches S7 and S8 in the OFF position.
In Force 10 mode, the McBasic 10/100 acts as a 10Base-T to 10Base-FL media converter; 100 Mbps signals are not accepted. To enable Force 10 mode, set switch S7 and S8 to the ON position, with switch S6 in the OFF position.
In Force 100 mode, McBasic 10/100 acts as a 100Base-TX to100Base-SX multi-mode or 100Base-FX single-mode fiber media converter; 10 Mbps signals are not accepted. To enable Force 100 mode, set switch S7 to the ON position, with switches S6 and S8 in the OFF position.

Auto Negotiation and the McBasic 10/100

When connecting two McBasic 10/100 units between two end stations (devices such as switches or NICs), all devices in the media conversion should ideally support and use Auto Negotiation. While it is possible to have Auto Negotiating devices on one side of the media conversion and fixed (Force Mode non-Auto Negotiating) devices on the other, link LEDs will react differently depending on where a link fault occurs. IMC Networks recommends configuring every device in the media conversion for Auto Negotiation.

For installations where Auto Negotiation is not possible from one end of the media conversion to the other: Configure all devices for 10 Mbps or 100 Mbps connections manually.

Troubleshooting Features

The McBasic 10/100 media converters include two advanced troubleshooting features to help locate "silent failures" on the network.

- Transparency
- Link Fault Detection (LFD)

Transparency

Transparency is only available in Auto Negotiation mode; it is not available in either of the two Force modes. When the McBasic 10/100 is Auto Negotiating, transparency treats the connection between the two end devices as if there were no media converters installed. For example, in a typical application where two media converters are installed between two copper-based switches, the twisted pair cables as well as the fiber cable are seen as one entity. If a fault occurs on any segment between the two end devices, link LEDs on the end devices will go out.
As stated, transparency is available when McBasic 10/100 is operating in Auto Negotiation mode:

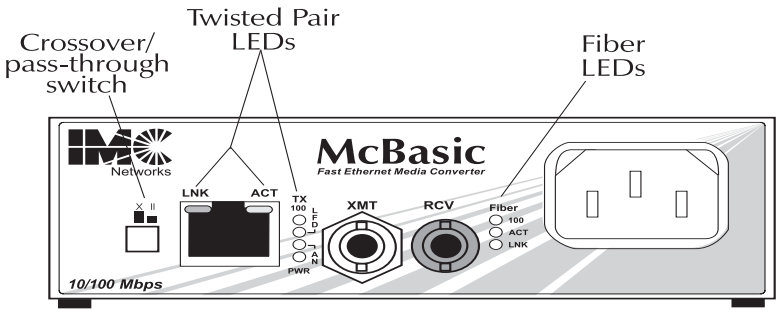
- S6 (AN/PNP) must be ON
- S5 (LFD), S7 (Force) and S8 (10 or 100) must be OFF

Link Fault Detection (LFD)

Link Fault Detection (LFD) is only available when using Force 10 or Force 100 mode; it is not available in Auto Negotiation mode. When LFD is enabled and the input link is down at one interface to the McBasic 10/100, the transmitter output on that interface is turned off for about 425ms every 3.8 seconds (i.e., blinking). It applies to both network interfaces and to both data rates. If the link at the other interface to the McBasic 10/100 is also down, there is no output. LFD causes the Link Up indicator of the link partner to blink.
When the McBasic 10/100 is in one of the force modes, enable LFD by setting S5 to the ON position. Disable LFD (default) by setting S5 to the OFF position.
In order for LFD to function properly, Force mode must be enabled by setting

- S7 to ON with either S8 ON for 10 Mbps or S8 OFF for 100 Mbps
- S6 must also be ON

NOTE
When using the LFD feature, if the DIP Switches are in any other combination than listed above, the McBasic 10/100 may exhibit erratic behavior.



LED Operation

The McBasic 10/100 features several diagnostic LEDs per port (see illustration above). The LED functions for the McBasic 10/100 are:

Port	LED	Definition
Twisted Pair port	LNK	Glows green when a twisted pair link is established.
	ACT	Glows yellow when data is detected on the port.
	100	Glows yellow when 100 Mbps data is detected on the port.
	LFD	Glows green when Link Fault Detection is enabled. This feature is available only when force 10 or force 100 is enabled.
	AN	Glows green when Auto Negotiation mode is enabled.
	PWR	Glows green when unit has power.
Fiber port	100	Glows yellow when 100 Mbps data is detected on the port.
	ACT	Glows green when data is detected on the port.
	LNK	Glows green when a fiber link is established.

NOTE
Before either LNK LED will glow solid, the twisted pair and fiber optic cables must be connected and the twisted pair crossover/ pass-through switch set correctly.

Installation Troubleshooting

During installation, first test the fiber and twisted pair connections with all troubleshooting features disabled, then enable these features (if desired) just before final installation. This will reduce the features' interference with testing.
When working with units where the features cannot be disabled, both the twisted pair and fiber connections must be established before the link LEDs will light.
To test a media converter by itself, have an appropriate fiber patch cable, and then follow the three easy steps to test:

Step 1	Configure the McBasic 10/100 to Force 100 Mbps mode.
Step 2	Connect the media converter to the twisted pair device with a twisted pair cable.
Step 3	Loop a single strand of fiber from the transmit port to the receive port of the media converter.
Step 4	Verify that both the twisted pair and fiber links on the converter. Refer to the LED Operation section.

NOTE
Use caution when conducting a loopback test. It is possible to create a network loop if connecting the media converter's twisted pair port to an active network. IMC Networks recommends connecting the twisted pair cable to a computer when performing this type of test.

Use the appropriate twisted pair cable, and have the crossover/pass-through switch set correctly if the media converters do not include AutoCross.

Electrostatic Discharge Precautions

Electrostatic discharge (ESD) can cause damage to any product, add-in modules or stand alone units, containing electronic components. Always observe the following precautions when installing or handling these kinds of products

1. Do not remove unit from its protective packaging until ready to install.
2. Wear an ESD wrist grounding strap before handling any module or component. If the wrist strap is not available, maintain grounded contact with the system unit throughout any procedure requiring ESD protection.
3. Hold the units by the edges; do not touch the electronic components or gold connectors.
4. After removal, always place the boards on a grounded, static-free surface, ESD pad or in a proper ESD bag. Do not slide the modules or stand alone units over any surface.

WARNING! Integrated circuits and fiber optic components are extremely susceptible to electrostatic discharge damage. Do not handle these components directly unless you are a qualified service technician and use tools and techniques that conform to accepted industry practices.

Fiber Optic Cleaning Guidelines

Fiber Optic transmitters and receivers are extremely susceptible to contamination by particles of dirt or dust, which can obstruct the optic path and cause performance degradation. Good system performance requires clean optics and connector ferrules.

1. Use fiber patch cords (or connectors, if you terminate your own fiber) only from a reputable supplier; low-quality components can cause many hard-to-diagnose problems in an installation.
2. Dust caps are installed at IMC Networks to ensure factory-clean optical devices. These protective caps should not be removed until the moment of connecting the fiber cable to the device. Should it be necessary to disconnect the fiber device, reinstall the protective dust caps.
3. Store spare caps in a dust-free environment such as a sealed plastic bag or box so that when reinstalled they do not introduce any contamination to the optics.
4. If you suspect that the optics have been contaminated, alternate between blasting with clean, dry, compressed air and flushing with methanol to remove particles of dirt.

IMC Networks Technical Support

Tel: (949) 465-3000 or (800) 624-1070 (in the U.S. and Canada);
+32-16-550880 (Europe)

Fax: (949) 465-3020

E-Mail: techsupport@imcnetworks.com

Web: www.imcnetworks.com

Specifications

Environmental

Operating Temperature
32° - 104° F (0° to 40° C)

Storage Temperature
20° - 160° F (-20° to 70° C)

Humidity
5 to 95% (non-condensing)

Input Specifications
100/240 ±10% V AC, 50/60Hz, 1A

Fiber Optic Specifications

For fiber optic specifications, visit the IMC Networks Web site at http://www.imcnetworks.com/adocs/fcs.asp

Safety Certifications

UL/CUL: Listed to Safety of Information Technology Equipment, including Electrical Business Equipment.

CE: The products described herein comply with the Council Directive on Electromagnetic Compatibility (2004/108/EC) and the Council Directive on Electrical Equipment Designed for use within Certain Voltage Limits (2006/95/EC). Certified to Safety of Information Technology Equipment, Including Electrical Business Equipment. For further details, contact IMC Networks.

Class 1 Laser product, Luokan 1 Laserlaite,
Laser Klasse 1, Appareil A'Laser de Classe 1

European Directive 2002/96/EC (WEEE) requires that any equipment that bears this symbol on product or packaging must not be disposed of with unsorted municipal waste. This symbol indicates that the equipment should be disposed of separately from regular household waste. It is the consumer's responsibility to dispose of this and all equipment so marked through designated collection facilities appointed by government or local authorities. Following these steps through proper disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about proper disposal, please contact local authorities, waste disposal services, or the point of purchase for this equipment.

19772 Pauling • Foothill Ranch, CA 92610-2611 USA
TEL: (949) 465-3000 • FAX: (949) 465-3020
www.imcnetworks.com

ISO 9001:2008 REGISTERED

RoHS

Made in USA

© 2010 IMC Networks. All rights reserved.

The information in this document is subject to change without notice. IMC Networks assumes no responsibility for any errors that may appear in this document. McBasic 10/100 is a trademark of IMC Networks. Other brands or product names may be trademarks and are the property of their respective companies.

Document Number 55-80216-01 B8 **February 2010**